

REMARKS

The Applicant would like to thank the Examiner for the examination set forth in the Office action of January 16, 2008. In view of the examination and Office action, the Applicant has amended the claims to more clearly distinguish them over the prior art. The Applicant believes that the amended claims now recite patentable subject matter, and respectfully requests the Examiner to give due consideration to the remarks below.

Amendments to the Claims

The claims have been amended as indicated above. Specifically:

- Claim 26 (previously, the only independent claim) has been amended to include additional limitations distinguishing the claim over the prior art. Support for the amendments can be found in Figs. 1 and 3-10, and the accompanying description at page 5 line 28 through page 6 line 8, and page 6 line 19 through page 7 line 15.
- Claims 27 and 34 have been cancelled since they are perceived as being redundant in view of the amendments to claim 26.
- Claims 35-37 have been amended to change their dependency in view of the cancellation of claim 34.
- Claim 48 is now shown as "cancelled".
- Claim 49 has been amended to correct an error in the group listing ("or" replaced with "and"). And:
- Claims 52 and 53 are newly added. Support for new claim 52 (which depends from claim 26) is found in the specification at page 7 line 14; support for new (independent) claim 53 is found in the same locations as support for the amendments to claim 26, as well as in Figs. 1-13, 16 & 17, which all show a

1 cladding in cross section having at least one side with a curvature of radius
2 greater than half the diameter.

3 4 Claim Objections

5 Claim 48 was objected to as being missing.

6 In response, the Applicant has adopted the Examiner's recommended cure of
7 including claim 48 as "cancelled". Accordingly, the Applicant requests that the claim
8 objection now be removed.

9 10 Rejection of claims under 35 USC § 102

11 Claims 26-30, 32, 44, 45, 47 and 49-51 have been rejected under 35 USC § 102
12 as being anticipated by U.S. Pat. 5,966,491 ("DiGiovanni"); claims 26, 28, 29, 31, 33,
13 44, 45, 47, 50 and 51 have been rejected under 35 USC § 102 as being anticipated by
14 U.S. Pat. App. Publ. No. 2003/0152349 ("Lauzon"); and claims 26-30, 32, 41-47 and 49-
15 51 have been rejected under 35 USC § 102 as being anticipated by U.S. Pat. 6,483,973
16 ("Mazzarese").

17 It is noted that from among claims 26-51, claim 26 is the only independent claim.
18 Accordingly, if the Applicant can demonstrate that claim 26 is not anticipated by the
19 cited references, then it is axiomatic that any claim which depends from claim 26 is also
20 not anticipated by those same references.

21 Claim 26 has been amended to incorporate the claim limitations from claim 34
22 (as well as to include additional amendments for the purposes of clarity). It is noted that
23 claim 34 was not rejected as being anticipated by any of the cited references.
24 Accordingly, amended claim 26 is not anticipated by any of the cited references for at
25 least the same reason that claim 34 (which originally depended from claim 26) was not

1 anticipated by any of the cited references. Specifically, none of the cited references
2 show a fiber having a cladding that is defined by circular arcs having centers at vertices
3 of an equilateral star, as now required by claim 26.

4 In view of the amendments to claim 26, the Applicant contends that claim 26, and
5 those claims which depend therefrom (i.e., claims 28-33, 35-47 and 49-52) are not
6 anticipated by the cited references. The Applicant therefore respectfully requests that
7 the rejections of claims 26-33, 41-47 and 49-51 under 35 USC § 102 be removed.

8
9 Rejection of claims under 35 USC § 103

10 Claims 34-40 have been rejected under 35 USC § 103 as being obvious over
11 U.S. Pat. 6,483,973 ("Mazzarese") "as applied to claim 1 above" [note: should probably
12 have been, "as applied to claim 26 above"].

13 As indicated above, claim 34 has been cancelled since the limitations of claim 34
14 have now been incorporated into claim 26 (along with additional text for the sake of
15 clarity). Accordingly, the Applicant wishes to present arguments as to why amended
16 claim 26 (and thus, each of claims 28-33, 35-47 and 49-52 which depend therefrom) are
17 not obvious over Mazzarese. That is, if claim 26 (as amended) can be shown to be
18 non-obvious over Mazzarese, then all of claims 26, 28-33, 35-47 and 49-52 should be
19 allowable over the cited references.

20 Claim 26 has been amended to read as follows:

21
22 Apparatus for providing optical radiation, comprising an optical fibre
23 having core, a first cladding and a second cladding, and wherein:
24 the core is located within the first cladding;
25 the first cladding is located within the second cladding;

1 in cross section, the first cladding is non-circular;

2 in cross section, the first cladding is defined by an equilateral star
3 and an outer periphery which is polygonal in shape, the polygonal shape
4 being defined by a plurality of intersecting sides, each side comprising a
5 circular arc, all said circular arcs being concave with respect to the core to
6 thereby form a plurality of concave sides; and

7 the circular arcs have centers at vertices of the equilateral star, such
8 that the first cladding has a substantially constant diameter in its cross-
9 section.

10 (Underlining added for emphasis.)

11
12 As can be seen, claim 26 now requires that, in cross section, the first cladding is
13 non-circular, is defined by an equilateral star, and is further defined by circular arcs
14 having centers at vertices of the equilateral star. The Applicant contends that this
15 structure is not obvious in light of Mazzaresse (or, indeed, any of the cited references).

16 While Mazzaresse does show fibers having cross sections that are non-circular
17 and are defined by circular arcs (e.g., Figs. 2b, 3a and 3b), in none of these instances
18 do the arcs have centers at the vertices of an equilateral star which defines the cross
19 section of the fiber, as required by claim 26. Further, in none of those instances is the
20 diameter of the cladding "substantially constant", as also required by claim 26.

21 Further, while Mazzaresse shows fibers that have a cross section defined by an
22 equilateral star (see Figs. 4a and 4b), in these instances the sides of the polygon are
23 not "circular arcs", but are instead flat. In the Office action at page 5, regarding claim
24 34, the Examiner states that, "[b]y forming a larger number of polygon sides, as shown
25 in Figure 4b or more, taking 2 or 3 sides of the polygon would substantially form a

1 circular arc. Furthermore, circular arcs are substantially many polygon sides joined
2 together.” While the Applicant agrees that in a flat-sided polygon defined by an
3 equilateral star (similar to Fig. 4b of Mazzaresse), and having a very large number of
4 sides, eventually 2 or 3 contiguous sides of the polygon will begin to approximate a
5 circular arc. However, these arcs will not have “centers at vertices of [an] equilateral
6 star” that defines the polygon. In fact, using Figs. 4a and 4b of Mazzaresse as starting
7 points, if the number of sides of the polygon is continually increased to the point where
8 several contiguous sides essentially form a “circular arc”, then the center of that arc will
9 be at the center of the polygon, and not at the vertices of the equilateral star which
10 defines the polygon. Further, by adding more and more sides to the polygons of Figs.
11 4a and 4b of Mazzaresse, eventually the “polygons” will substantially form circles. Yet
12 Applicant’s claim 26 specifically recites that “the cladding is non-circular”.

13 Basically, Mazzaresse does not show any cladding configuration wherein the
14 cladding is non-circular, is defined by circular arcs and an equilateral star, and wherein
15 the circular arcs have centers at the vertices of the star (all as required by claim 26). In
16 fact, Mazzaresse does not even show or describe any “equilateral star” as defining any of
17 the geometries – i.e., Mazzaresse is completely silent on the relevance of an “equilateral
18 star” to the geometry of the cladding in cross section.

19 Further, one of skill in the art, at the time of the Applicant’s invention, and with full
20 knowledge of Mazzaresse, simply would not have arrived at the structure of an optical
21 fiber as recited in claim 26 without the addition of an inventive step. Any possible
22 combination of the figures, and geometrical rules of construction of the figures, depicted
23 in Mazzaresse will still not produce the apparatus of claim 26. It is only by making non-
24 obvious modifications to structures depicted by Mazzaresse that one would arrive at the
25 apparatus of claim 26. And there is simply no reason why one would be lead to modify

1 Mazzarese in this non-obvious manner (i.e., by choosing the vertices of an equilateral
2 star (which is not shown by Mazzarese) as the centers for circular arcs which define a
3 polygonal shape for a cladding). Mazzarese itself does not contain any teaching,
4 suggestion or motivation to make the modification, and the Examiner has not provided
5 any statement which would support such an allegation.

6 For at least these reasons, the Applicant contends that claim 26 is not obvious in
7 light of the cited references, and should be allowed. Further, claims 28-33, 35-47 and
8 49-52, which all depend either directly or indirectly from claim 26, should also be
9 allowed for at least the same reasons that claim 26 is allowable.

10
11 New claim 53:

12 The Applicant believes that new independent claim 53 is allowable since none of
13 the references show an optical fiber wherein, in cross section:

- 14 • the cladding is non-circular;
- 15 • the cladding has a substantially constant diameter;
- 16 • the cladding is defined a plurality of intersecting sides, each side being
17 concave with respect to the core; and
- 18 • at least one of the concave sides has a curvature of radius greater than
19 half the diameter.

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22 (Continued on next page.)
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1 SUMMARY

2 The Applicant believes that the above response fully addresses all issues raised
3 in the Office action, and respectfully requests timely allowance of claims 28-33, 35-47
4 and 49-52.

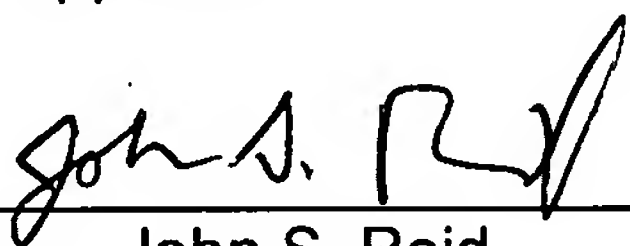
5 The Examiner is respectfully requested to contact the below-signed
6 representative if the Examiner believes this will facilitate prosecution toward allowance
7 of the claims.

8
9 Respectfully submitted,

10 Malcolm Paul VARNHAM,
11 Applicant

12 Date: April 9, 2008

13 By



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